Understanding Personal Finance and Compound Interest

Student workbook: attempt every question before looking at the solutions manual.

O1	Explain income, expenses and a simple budget.
O2	Understand saving, debt and interest.
O3	Calculate simple and compound interest, step by step.
O4	Explain why time matters so much in long-term planning.

O1: Explain income, expenses and a simple budget.

Q01 [Foundational · short answer]

What is take-home pay?

Q02 [Foundational · classification]

Classify as need or want: rent, streaming subscription, electricity, restaurant meal.

Q03 [Core · numerical]

Apply 50/30/20 to $4,200 take-home pay.

Q04 [Core · true/false]

True or false: the 50/30/20 rule must be followed exactly by everyone.

Q05 [Applied · application]

Sam's take-home pay is $2,000; needs cost $1,300. Using 50/30/20 as a guide, how much is left for wants and saving, and what would you suggest?

Q06 [Applied · explanation]

Why does an emergency fund help prevent debt?

O2: Understand saving, debt and interest.

Q07 [Foundational · short answer]

What is interest, from a borrower's point of view?

Q08 [Foundational · multiple choice]

What does APR stand for? (a) annual percentage rate (b) average payment ratio (c) annual payment return (d) account profit rate

Q09 [Core · numerical]

A loan of $1,500 has simple interest of 8% a year. How much interest is due after one year?

Q10 [Core · true/false]

True or false: all debt is harmful.

Q11 [Applied · explanation]

Why can an unpaid credit card balance grow faster than the headline rate suggests?

Q12 [Advanced · evaluation]

An advert promises '30% guaranteed returns, no risk'. What should you think and do?

O3: Calculate simple and compound interest, step by step.

Q13 [Foundational · numerical]

Simple interest: $1,000 at 5% for 3 years. Final balance?

Q14 [Foundational · numerical]

Compound interest: $1,000 at 5% yearly for 2 years. Final balance?

Q15 [Core · numerical]

$500 at 4% compounded yearly for 5 years. Final balance to the nearest cent?

Q16 [Core · numerical]

Use the Rule of 72 to estimate how long money takes to double at 8% a year.

Q17 [Applied · numerical]

$3,000 at 6% for 10 years: calculate the difference between compound (yearly) and simple interest.

Q18 [Applied · numerical]

$1,000 at 12% a year, compounded monthly, for 1 year. Final balance?

Q19 [Advanced · numerical]

How many whole years does $1,000 need at 5% yearly compounding to exceed $2,000? Check the Rule of 72.

O4: Explain why time matters so much in long-term planning.

Q20 [Foundational · true/false]

True or false: with compound interest, the amount added each year grows over time.

Q21 [Core · numerical]

Using the lesson's figures, how much more did Amina pay in than Ben, and how much more did she end with?

Q22 [Core · short answer]

Why is the third decade of compound growth larger than the first?

Q23 [Applied · explanation]

Explain how inflation affects long-term saving.

Q24 [Applied · application]

A 20-year-old can save $50 a month now, or $100 a month from age 30. Without exact calculation, which is likely to give more by 60 at the same rate, and why?

Q25 [Advanced · numerical]

At 5% (end-of-year deposits), what does saving $1,200 a year for 20 years grow to?

Assignment 1: build a one-month budget (individual)

Use real figures if you are comfortable, or a realistic invented person.

1. List income and all expenses, marked as needs or wants (O1).
2. Compare your plan with 50/30/20 and justify any differences (O1).
3. Include an emergency-fund target and a monthly amount towards it (O2).
4. Track actual spending for one month (or simulate it) and write three adjustments (O1).

Assignment 2: the cost of waiting (spreadsheet)

Build a spreadsheet that shows $100 a month saved (as $1,200 at the end of each year) at 5% from ages 25, 30 and 35 until 65.

1. Show the balance each year for all three (O3).
2. Find the totals paid in and the final balances (O4).
3. Repeat at 3% and comment on the effect of the rate and of time (O4).